


REMARKS

The present Preliminary Amendment is submitted to incorporate the Article 34 Amendments and to delete the multiple dependencies in claims 3-4, 6-7, 12, 14-16, 20-24, 27, 29-30, 36-37, 39-40, 43-45, thereby placing such claims in condition for examination and reducing the required PTO filing fee.

Copies of the amended portion of the claims with changes marked therein is attached and entitled "*Version with Markings to Show Changes Made.*"

Respectfully submitted,

Kazuto NISHIDA et al.

By 
Michael S. Huppert
Registration No. 40,268
Attorney for Applicants

MSH/kjf
Washington, D.C. 20006-1021
Telephone (202) 721-8200
Facsimile (202) 721-8250
July 26, 2001

THE COMMISSIONER IS AUTHORIZED
TO CHARGE ANY DEFICIENCY IN THE
FEES FOR THIS PAPER TO DEPOSIT
ACCOUNT NO. 23-0975

CLAIMS

1. An electronic component mounting method comprising:

forming a ball (96, 96a) at a tip of a metal wire
5 (95) by an electric spark similarly to wire bonding and
forming a bump (3, 103) by thermocompression-bonding the
formed ball to an electrode (2) of an electronic component
(1) with supersonic waves by means of a capillary (93,
193);

10 mounting the electronic component on a circuit
board (4) by aligning in position the electrode of the
electronic component with an electrode (5) of the board
with interposition of an anisotropic conductive layer (10)
in which an insulating resin mixed with an inorganic filler
15 is mixed with a conductive particle (10a); and

subsequently bonding the electronic component to
the circuit board by hardening the insulating resin of the
anisotropic conductive layer interposed between the
electronic component and the circuit board while correcting
20 warp of the board and crushing the bump with a pressure
force of not smaller than 20 gf per bump applied to the
electronic component against the circuit board by means of
a tool (8) and heat applied from the electronic component
side or heat applied from the board side or heat applied
25 from both the electronic component side and the board side,

so that the electrode of the electronic component is electrically connected with the electrode of the circuit board.

2. An electronic component mounting method as claimed in claim 1, wherein, before mounting the electronic component on the board by aligning in position the electrode of the electronic component with the electrode (5) of the circuit board (4) with interposition of the anisotropic conductive layer after the formation of the bump,

a tip of the formed bump is shaped so as to prevent collapse of a neck portion of the bump by once pressurizing the bump with a load of not greater than 20 gf.

3. An electronic component mounting method as claimed in claim 1 [or 2] wherein

the insulating resin (6m) of the anisotropic conductive layer is an insulative thermosetting epoxy resin, and an amount of the inorganic filler mixed with this insulative thermosetting epoxy resin is 5 to 90 wt% of the insulative thermosetting epoxy resin.

4. An electronic component mounting method as claimed in [any one of] claims 1 [through 3], wherein

the insulating resin (6m) of the anisotropic conductive layer is in a liquid form when applied to the board, and after semi-solidifying the resin by hardening